



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

27160

7590

09/27/2010

KATTEN MUCHIN ROSENMAN LLP  
(C/O PATENT ADMINISTRATOR)  
2900 K STREET NW, SUITE 200  
WASHINGTON, DC 20007-5118

EXAMINER

CHOI, LING SU

ART UNIT

PAPER NUMBER

1796

DATE MAILED: 09/27/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,630	04/14/2004	Michel Armand	213411.00032	4612

TITLE OF INVENTION: NEW ELECTRODE MATERIALS DERIVED FROM POLYQUINONIC IONIC COMPOUNDS AND THEIR USE IN  
ELECTROCHEMICAL GENERATORS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/27/2010

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** **Mail** **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax** **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

27/160 7590 09/27/2010

**KATTEN MUCHIN ROSENMAN LLP**  
**(C/O PATENT ADMINISTRATOR)**  
**2900 K STREET NW, SUITE 200**  
**WASHINGTON, DC 20007-5118**

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/823,630	04/14/2004	Michel Armand	213411.00032	4612
------------	------------	---------------	--------------	------

**TITLE OF INVENTION: NEW ELECTRODE MATERIALS DERIVED FROM POLYQUINONIC IONIC COMPOUNDS AND THEIR USE IN ELECTROCHEMICAL GENERATORS**

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/27/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHOI, LING SIU	1796	429-128000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,630	04/14/2004	Michel Armand	213411.00032	4612
27160	7590	09/27/2010	EXAMINER	
KATTEN MUCHIN ROSENMAN LLP (C/O PATENT ADMINISTRATOR) 2900 K STREET NW, SUITE 200 WASHINGTON, DC 20007-5118			CHOI, LING SIU	
			ART UNIT	PAPER NUMBER
			1796	
DATE MAILED: 09/27/2010				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 372 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 372 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability****Application No.**

10/823,630

**Applicant(s)**

ARMAND ET AL.

**Examiner**

Ling-Siu Choi

**Art Unit**

1796

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/30/2010.
2. ☒ The allowed claim(s) is/are 2 and 3.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/361,962.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

/Ling-Siu Choi/  
Primary Examiner, Art Unit 1796

### DETAILED ACTION

1. This Office Action is in response to the Amendment after Final filed 08/30/2010. Claims 1 and 4-16 were cancelled and Claims 2-3 are now pending.

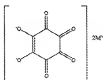
### *Allowable Subject Matter*

2. Claims 1-2 are allowed.
3. The following is an examiner's statement of reasons for allowance:
- The present claims are allowable over the closest references: Shionogi & Co. Ltd. (GB 1,115,335), Speck (US 5,637,452), and Fleischer (US 5,512,381).

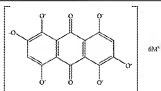
### Summary of Claim 2:

A redox compound having at least one state of oxidation state and wherein said compound is selected from the group consisting of:

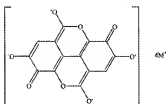
a rhodizonic acid salt represented by formula (I):



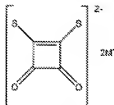
a rufigallic acid salt represented by formula (II):



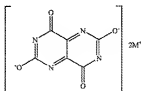
an elagic acid salt represented by formula (III):



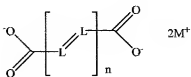
a salt of 1,2-dimercaptocyclobutenedione (dithiosquarique) acid represented by formula (IV):



a salt of 1,5 dihydropyrimido[5,4d]pyrimidine 2,4,6,8(3H,7H)tetrone represented by formula (V):



a salt of a dicarboxylic acid comprising groups linked with conjugated segments corresponding to formula (VI):



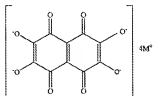
wherein L is independently CR<sup>5</sup>, N or C-CN, and

wherein R<sup>5</sup> is hydrogen, C<sub>1-12</sub> alkyl, C<sub>2-12</sub> alkenyl, C<sub>6-10</sub> aryl,

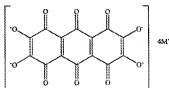
Art Unit: 1796

C<sub>6-10</sub> aryl C<sub>1-12</sub> alkyl, C<sub>1-12</sub> alkyl C<sub>6-10</sub> aryl optionally substituted with one or more oxa, aza or thia or from 1 to 30 carbon atoms, and wherein two R<sup>5</sup> can form an aliphatic cycle, an aromatic cycle or a heterocycle containing from 4 to 8 carbon atoms when both L are CR<sup>5</sup>;

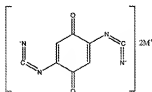
a salt of formula (VII):



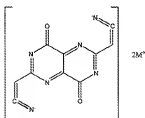
a salt of formula (VIII):



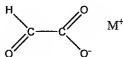
a salt of formula (IX):



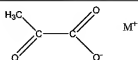
a salt of formula (X):



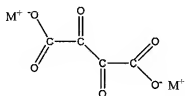
a salt of formula (XI):



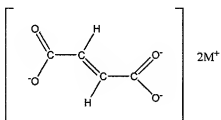
a salt of formula (XII):



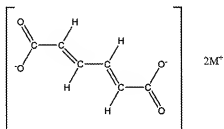
a salt of formula (XIII):



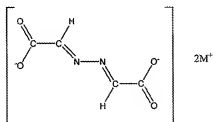
a salt of formula (XIV):



a salt of formula (XV) :

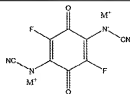


a salt of formula (XVI):



a salt of formula (XVII)





oxidation compounds of aforesaid salts of formulae (I) to (XVII);

being understood that:

in aforesaid formulae (I) to (XVII),

M<sup>+</sup> represents an alkaline metallic cation, an

alkaline-earth cation, a transition metal cation, a rare earth cation, an organometallic cation, an organic cation of the "onium" type, a repetitive unit of a cationic oxidized conjugated polymer, or a monomeric or polymeric cation optionally having a redox character; and

M<sup>+</sup> satisfies with formula n/pM<sup>p+</sup> where n is the above mentioned number of cation atoms or molecules given for aforesaid salts and p is the valency of the above mentioned cation atoms or molecules;

in aforesaid formulae (I) to (XVII),

the oxygen atoms with a double bond can be replaced with a group -NCN or -C(CN)<sub>2</sub> and oxygen anion O<sup>-</sup> can be replaced with a group N<sup>-</sup>CN or C<sup>-</sup>-(CN)<sub>2</sub>; and

wherein the compound is used as a negative electrode component in electrochemical generators when redox couples are comprised between 0.1 and 2V vs. Li<sup>+</sup>/Li<sup>0</sup>; or as a positive electrode component in electrochemical generators or as an active or passive electrode in electrochromic devices when redox couples are comprised between 2 and 3.7V vs. Li<sup>+</sup>/Li<sup>0</sup>.

Shionogi & Co. Ltd. discloses potassium rhodizonate, which is used in an antidiabetic agent (col. 1, lines 15-26). It is noted that dipotassium rhodizonate reads on the claimed compound. It is noted that Shionogi & Co. Ltd. is silent on the redox properties of these polymers. In view of the compound being identical to the claimed

compound, the compound will inherit such redox properties. Thus, Shionogi & Co. Ltd. do not teach or fairly suggest the claimed redox compound, wherein the compound is used as a negative electrode component in electrochemical generators when redox couples are comprised between 0.1 and 2V vs.  $\text{Li}^+/\text{Li}^\circ$ ; or as a positive electrode component in electrochemical generators or as an active or passive electrode in electrochromic devices when redox couples are comprised between 2 and 3.7V vs.  $\text{Li}^+/\text{Li}^\circ$ .

Speck discloses an aqueous reagent comprising elagic acid and a metal ion such as  $\text{Ni}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cu}^+$ , or  $\text{Cu}^{2+}$ , which reads on the metal salt of elagic acid (abstract). It is noted that Speck is silent on the redox properties of this compound. In view of this compound being identical to the claimed compound, this compound will inherit such redox properties. Thus, Speck do not teach or fairly suggest the claimed redox compound, wherein the compound is used as a negative electrode component in electrochemical generators when redox couples are comprised between 0.1 and 2V vs.  $\text{Li}^+/\text{Li}^\circ$ ; or as a positive electrode component in electrochemical generators or as an active or passive electrode in electrochromic devices when redox couples are comprised between 2 and 3.7V vs.  $\text{Li}^+/\text{Li}^\circ$ .

Fleischer discloses a battery comprising an anode, a cathode, and a solid state electrolyte between the anode and the cathode, wherein the anode is composed of a material containing a proton-donating aromatic compound, the proton-donating aromatic compound being rhodizonic acid (claim 12). However, Fleischer do not teach or fairly suggest the claimed redox compound [rhodizonic acid salt], wherein the compound is

used as a negative electrode component in electrochemical generators when redox couples are comprised between 0.1 and 2V vs.  $\text{Li}^+/\text{Li}^\circ$ ; or as a positive electrode component in electrochemical generators or as an active or passive electrode in electrochromic devices when redox couples are comprised between 2 and 3.7V vs.  $\text{Li}^+/\text{Li}^\circ$ .

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.

Application/Control Number: 10/823,630  
Art Unit: 1796

Page 9

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

September 30, 2010